CLAIMS:

1. A device for the inspection of one or more moving surfaces (8), notably for the inspection of a rotating surface (8) of a wafer (13), which device includes at least one light source (1), notably a laser light source, and a beam splitter (4) for splitting a light beam (2) that is emitted by said source into at least one reference beam (6) that is applied to a detector (16) and at least one measuring beam (5) that is applied to the surface (surfaces), the measuring beam (5) containing at least one component in the direction of movement (U) of the relevant surface (8) or in the opposite direction, and the light (15) that is reflected by the surface (8) having, at least upon detection of a defect (14) on the surface (8), a frequency (ν') that has been shifted relative to the measuring beam (5) and that the reference beam (6) can be superposed thereon, characterized in that the device includes an evaluation unit (29) for determining the velocity (v) of a defect (14) on the surface (8) from the shifted frequency (ν') and from this velocity the position of the defect on the surface (8).

2. A device as claimed in claim 1, characterized in that the detector (16) has exactly one entrance window that is capable of detecting the superposition of the reference beam (6) and the reflected light (15).

3. A device as claimed in claim 1, characterized in that there are provided two detectors (16; 17), the reference beam (6) being detectable by a first detector whereas the superposition of the reference beam (6) and the reflected light (15) can be detected by a second detector.

4. A device as claimed in one of the claims 1 to 3, characterized in that the superposition of the reference beam (6) and the reflected light (15) is formed in the optical beam path and that the superposition image thus obtained can be projected into an entrance window of a detector (16).

5. A device as claimed in one of the claims 1 to 4, characterized in that the input signal formed by the superposition of the reference beam (6) and the reflected light (15) can

be electronically evaluated and that the frequency shift (ν-ν') of the reflected light (15) can be determined therefrom.

6. A device as claimed in one of the claims 1 to 5, characterized in that the speed of rotation (ν) of a rotating defect (14) can be calculated from to the frequency shift (ν-ν') by way of the Doppler formula.

7. A device as claimed in claim 6, characterized in that the radial position (r) of the defect (14) can be calculated from the velocity (v) of the defect (14) while the circular frequency (ω) of the rotation of the surface (8) is known.

8. A device as claimed in one of the claims 1 to 6, characterized in that the moving surface (8) is associated with a device for detecting its instantaneous orientation.

9. A device as claimed in claim 7, characterized in that the surface (8) is rotatable in the plane in which its major axis extends and that the device enables detection of the angle of rotation.

10. A device as claimed in one of the claims 4 to 8, characterized in that the position of a defect (14) on the inspected surface relative to said scale can be determined from the signal detected by the detector (16; 17).

11. A device as claimed in one of the claims 1 to 10, characterized in that the surface (8) to be inspected can move in a rotational as well as in a translational mode.

12. A device as claimed in one of the claims 1 to 11, characterized in that the light beam (2) that is emitted by the light source (1) is split into a plurality of measuring beams (5) and one or more reference beams (6), and that a plurality of surfaces (8) can be inspected at the same time.

13. A method for the inspection of one or more moving surfaces, notably for the inspection of a rotating surface of a wafer, where a light beam that is emitted by a light source, notably a laser light source, is split by means of a beam splitter into at least one reference beam that is applied to a detector and a measuring beam that is applied to the

surface, the measuring beam containing at least one component in the direction of movement of the relevant surface or in the opposite direction, the light that is reflected by the surface having, at least upon detection of a defect on the surface, a frequency that has been shifted relative to the measuring beam, and the reference beam being superposed on said reflected light, characterized in that the speed of a defect on the surface is determined from the superposed signal formed from the reference beam and the reflected light, and that the position of the defect on the surface is determined therefrom.

14. An evaluation unit (29) for evaluating at least one electrical input signal which contains an alternating voltage component, the evaluation unit storing a computer program, that is, notably a program for carrying out the method in conformity with claim 13, characterized in that the computer program determines the frequency of the input signal from the alternating voltage component thereof, compares this frequency with a reference and calculates therefrom, by way of the Doppler formula, the velocity that corresponds to the frequency difference between said signals.